



45551281  
SEQUENCE LISTING

<110> BASSLER, BONNIE L.  
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<120> COMPOUNDS AND METHODS FOR REGULATING BACTERIAL GROWTH  
AND PATHOGENESIS

<130> 4555-128.1.1 US

<140> 10/802,425  
<141> 2004-03-17

<150> 10/300,818  
<151> 2002-11-19

<150> 09/853,832  
<151> 2001-05-10

<150> 60/203,000  
<151> 2000-05-10

<150> 60/254,398  
<151> 2000-12-07

<160> 36

<170> PatentIn Ver. 3.3

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<211> 519  
<212> DNA  
<213> Vibrio harveyi

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actgctccaa acaaagacat ccttctgag aaaggaaattc atacattttaga gcatttgtac 180  
gcaggcttta tgcgtaatca cctaaatggt gatagcggtt agatcattga tatctcacca 240  
atgggtgcc gtactggttt ctacatgagc ttgattggta cgcccttcaga gcagcaagtg 300  
gctgacgctt ggattgccgc gatggaagac gtactaaaag tagaaaaacca aaacaagatc 360  
cctgagttga acgaatacca atgtggtaca gcagcgatgc actctctggta tgaagcgaag 420  
caaattcgca agaacattct agaagtgggt gtggcggtga ataagaatga tgaattggca 480  
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<210> 2  
<211> 516  
<212> DNA  
<213> Escherichia coli

<400> 2  
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tgcgtgccga acaaagaagt gatgcccggaa agaggatcc ataccctggta gcacctgttt 180  
gctgggttta tgcgtAACCA tcttaacgggt aatgggttag agattatcgat tatctcgcca 240  
atgggtgcc gcaccgggtt ttatatgagt ctgattggta cgccagatga gcagcgtgtt 300  
gctgatgcct ggaaaggccgc aatggaagac gtgctgaaag tgcaggatca gaatcagatc 360  
ccggaactga acgtctacca gtgtggcact taccagatgc actcgttgca ggaagcgcag 420

45551281

gatattgcgc gtagcattct ggaacgtgac gtacgcata acagcaacga agaactggca 480  
ctgccaaag agaagttgca ggaactgcac atctag 516

<210> 3  
<211> 110  
<212> DNA  
<213> *Salmonella typhimurium*

<400> 3  
gatgtgctga aagtgcagga tcaaaaaccag atcccggagc tgaacgttta ccagtgcggt 60  
acgtatcaga tgcactcgct cagtgaagcg caggacattg cccgtcatat 110

<210> 4  
<211> 492  
<212> DNA  
<213> *Salmonella typhimurium*

<400> 4  
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cgcatggcga cgcaatcacg tgtttgatct gcgttttgc attccgaaca aagaagtgat 120  
gcccggaaaaa gggattcata cgcttgagca tctgtttgct ggctttatgc gcgaccacct 180  
caacgtaac ggcgttgaga ttatcgatct ctgcggatg ggctgcccgc cccgctttta 240  
catgagcctg attggcacgc cggacgagca gcgtgttgcc gacgccttggaa aagcggcgat 300  
ggcggatgtg ctgaaagtgc aggatcaaaa ccagatccccg gagctgaacg tttaccagt 360  
cggtacgtat cagatgcact cgctcagtga agcgcaggac attgcccgtc atattctgg 420  
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actgatattt ag 492

<210> 5  
<211> 504  
<212> DNA  
<213> *Haemophilus influenzae*

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tgtattccaa acaaagaaaat tcttccccca aaaggcattc atacacttgc acatttattt 180  
gctggattta tgcgcgtat tttaaatggc gatagcatag aaatttttgc tatttctccg 240  
atgggatgtc gcacgggattt tstatatgtct ttgattggca caccaaatgc acagaaaagt 300  
tctgaggctt gtttagcttc aatgcaagat gtttttaggtg tacaagatca agcttttatt 360  
cctgaattaa atatctatca atgcggaaagc tatacggaaac attccttgc agatgcacac 420  
gaaattgcca aaaatgttat cgcacgcggat ataggtgtaa ataaaaatgc agatttgtca 480  
ctcgataatt ctttattttt atag 504

<210> 6  
<211> 468  
<212> DNA  
<213> *Helicobacter pylori*

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gatgtgcgtc tcaaggcgc caaccaagat cacatggaca tgcctagcc acattttta 180  
gaggatattt tcgctgaaat tttccgcac catgccaggat atgtcggtt ttggcgccct 240  
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tttagggttt tagaaaagac catgcaagat gtgttaaagg ctacagaatgt gcctgcccgg 360  
aatgaaaagc aatgcgggtt ggcggctaac cacactttttag agggtgctaa ggatttagcg 420  
cgcgctttttt tagacaaacg cgctgagttt tctgaagtgg gggtttgc 468

45551281

<210> 7  
<211> 482  
<212> DNA  
<213> *Bacillus subtilis*

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cattgcggcg tgcataaaagt gggAACAGAC ggcgtttaa ataaatttga cattgtttt 120  
tgccagccaa ataaacaggc gatgaaggct gacaccattc acacactcga gcatttgctc 180  
gcgttacga ttcgttctca cgctgagaaa tacgatcatt ttgatatcat tgatatttct 240  
ccaatggct gccagacagg ctattatcta gttgtgagcg gagagccgac atcagcgaa 300  
atcggtgatc tgcttgaaga cacaatgaag gaagcgttag agattacaga aatacctgct 360  
gcgaatgaaa agcagtgcgg ccaagcgaag cttcatgatc tggaaaggcgc taaacgttta 420  
atgcgtttct ggcttcaca ggataaaagaa gaattgctaa aagtatttgg ctaaaataga 480  
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<212> DNA  
<213> *Borrelia burgdorferi*

<400> 8  
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gaaaaaaaaata acaagctta caatagatca tacaaaaactc aaccctggca tatatgtctc 120  
aagaaaaagat accttggaaa atgtaatatt tactacaata gacatttagaa tcaaagctcc 180  
caacatcgaa ccaataattt gaaacgcagc aatacataca atagagcaca taggagctac 240  
tttacttaga aataatgaag tttggaccga aaaaatagta tattttggcc ctatggatg 300  
cagaactggc ttttacttaa taattttgg agactatgaa agttaaagatc ttgttgactt 360  
agtctcatgg cttttttccg aaatcgtaaa ttttcagaa cctatcccag gcgcaagtga 420  
taaggaatgc gggaaattaca aagaacataa ctttgatatg gctaaatatg aatcttctaa 480  
atacttacaa atattaaaca atattaaaga agaaaattta aaatatcctt agctcat 537

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<211> 519  
<212> DNA  
<213> *Vibrio cholerae*

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actatGCCAA acaaagatAT cttgtctgag cgcggtatCC atactctaga gcatctctac 180  
gcgggCTTA tgcgcaatca ccttaacGGC agCCAAGTGG agatcatcgA tatttcacca 240  
atgggttgcc gtacaggTTT ctacatgagc ttgattggT cgccgacaga acagcaagtG 300  
gcacaagcat ggctagCCGc aatgcaagat gtgttggaaAG ttgaaAGCCA agagcaaATT 360  
cctgagctga atgagttacca gtgcggcact gcggcgatgc actcgctcgA agaagccAAA 420  
gCGATTGCGA aaaacgtgtat tgccgcaggc atctcggtt accgtaacgA tgagttggcG 480  
ctgcccgaat ctatgctcaa tgagctgaag gttcactaa 519

<210> 10  
<211> 172  
<212> PRT  
<213> *vibrio harveyi*

<400> 10  
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Pro Ala Val Arg Val Ala Lys Thr Met Gln Thr Pro Lys Gly Asp Thr  
20 25 30

45551281

Ile Thr Val Phe Asp Leu Arg Phe Thr Ala Pro Asn Lys Asp Ile Leu  
35 40 45  
Ser Glu Lys Gly Ile His Thr Leu Glu His Leu Tyr Ala Gly Phe Met  
50 55 60  
Arg Asn His Leu Asn Gly Asp Ser Val Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80  
Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Ser  
85 90 95  
Glu Gln Gln Val Ala Asp Ala Trp Ile Ala Ala Met Glu Asp Val Leu  
100 105 110  
Lys Val Glu Asn Gln Asn Lys Ile Pro Glu Leu Asn Glu Tyr Gln Cys  
115 120 125  
Gly Thr Ala Ala Met His Ser Leu Asp Glu Ala Lys Gln Ile Ala Lys  
130 135 140  
Asn Ile Leu Glu Val Gly Val Ala Val Asn Lys Asn Asp Glu Leu Ala  
145 150 155 160  
Leu Pro Glu Ser Met Leu Arg Glu Leu Arg Ile Asp  
165 170

<210> 11

<211> 171

<212> PRT

<213> Escherichia coli

<400> 11

Met Pro Leu Leu Asp Ser Phe Thr Val Asp His Thr Arg Met Glu Ala  
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Pro Ala Val Arg Val Ala Lys Thr Met Asn Thr Pro His Gly Asp Ala  
20 25 30

Ile Thr Val Phe Asp Leu Arg Phe Cys Val Pro Asn Lys Glu Val Met  
35 40 45

Pro Glu Arg Gly Ile His Thr Leu Glu His Leu Phe Ala Gly Phe Met  
50 55 60

Arg Asn His Leu Asn Gly Asn Gly Val Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80

Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Asp  
85 90 95

Glu Gln Arg Val Ala Asp Val Trp Lys Ala Ala Met Glu Asp Val Leu  
100 105 110

Lys Val Gln Asp Gln Asn Gln Ile Pro Glu Leu Asn Val Tyr Gln Cys  
115 120 125

Gly Thr Tyr Gln Met His Ser Leu Gln Glu Ala Gln Asp Ile Ala Arg  
130 135 140

Ser Ile Leu Glu Arg Asp Val Arg Ile Asn Ser Asn Glu Glu Leu Ala

45551281

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Leu Pro Lys Glu Lys	Leu Gln Glu Leu His Ile		
165	170		
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<212> PRT			
<213> <i>Salmonella typhimurium</i>			
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Thr Met Asn Thr Pro His Gly Asp Ala Ile Thr Val Phe Asp Leu Arg			
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Phe Cys Ile Pro Asn Lys Glu Val Met Pro Glu Lys Gly Ile His Thr			
35	40	45	
Leu Glu His Leu Phe Ala Gly Phe Met Arg Asp His Leu Asn Gly Asn			
50	55	60	
Gly Val Glu Ile Ile Asp Ile Ser Pro Met Gly Cys Arg Thr Gly Phe			
65	70	75	80
Tyr Met Ser Leu Ile Gly Thr Pro Asp Glu Gln Arg Val Ala Asp Ala			
85	90	95	
Trp Lys Ala Ala Met Ala Asp Val Leu Lys Val Gln Asp Gln Asn Gln			
100	105	110	
Ile Pro Glu Leu Asn Val Tyr Gln Cys Gly Thr Tyr Gln Met His Ser			
115	120	125	
Leu Ser Glu Ala Gln Asp Ile Ala Arg His Ile Leu Glu Arg Asp Val			
130	135	140	
Arg Val Asn Ser Asn Lys Glu Leu Ala Leu Pro Lys Glu Lys Leu Gln			
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Glu Thr Asp Ile			

<210> 13

<211> 167

<212> PRT

<213> *Haemophilus influenzae*

<400> 13

Met Pro Leu Leu Asp Ser Phe Lys Val Asp His Thr Lys Met Asn Ala	1	5	10
			15
Pro Ala Val Arg Ile Ala Lys Thr Met Leu Thr Pro Lys Gly Asp Asn			
20	25	30	
Ile Thr Val Phe Asp Leu Arg Phe Cys Ile Pro Asn Lys Glu Ile Leu			
35	40	45	
Ser Pro Lys Gly Ile His Thr Leu Glu His Leu Phe Ala Gly Phe Met			
50	55	60	

45551281

Arg Asp His Leu Asn Gly Asp Ser Ile Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80

Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Asn  
85 90 95

Glu Gln Lys Val Ser Glu Ala Trp Leu Ala Ser Met Gln Asp Val Leu  
100 105 110

Gly Val Gln Asp Gln Ala Ser Ile Pro Glu Leu Asn Ile Tyr Gln Cys  
115 120 125

Gly Ser Tyr Thr Glu His Ser Leu Glu Asp Ala His Glu Ile Ala Lys  
130 135 140

Asn Val Ile Ala Arg Gly Ile Gly Val Asn Lys Asn Glu Asp Leu Ser  
145 150 155 160

Leu Asp Asn Ser Leu Leu Lys  
165

<210> 14  
<211> 155  
<212> PRT  
<213> Helicobacter pylori

<400> 14  
Met Lys Thr Pro Lys Met Asn Val Glu Ser Phe Asn Leu Asp His Thr  
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Lys Val Lys Ala Pro Tyr Val Arg Val Ala Asp Arg Lys Lys Gly Val  
20 25 30

Asn Gly Asp Leu Ile Val Lys Tyr Asp Val Arg Phe Lys Gln Pro Asn  
35 40 45

Gln Asp His Met Asp Met Pro Ser Leu His Ser Leu Glu His Leu Val  
50 55 60

Ala Glu Ile Ile Arg Asn His Ala Ser Tyr Val Val Asp Trp Ser Pro  
65 70 75 80

Met Gly Cys Gln Thr Gly Phe Tyr Leu Thr Val Leu Asn His Asp Asn  
85 90 95

Tyr Thr Glu Ile Leu Glu Val Leu Glu Lys Thr Met Gln Asp Val Leu  
100 105 110

Lys Ala Thr Glu Val Pro Ala Ser Asn Glu Lys Gln Cys Gly Trp Ala  
115 120 125

Ala Asn His Thr Leu Glu Gly Ala Lys Asp Leu Ala Arg Ala Phe Leu  
130 135 140

Asp Lys Arg Ala Glu Trp Ser Glu Val Gly Val  
145 150 155

<210> 15  
<211> 157  
<212> PRT

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Arg Asp His Leu Asn Gly Asp Ser Ile Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80  
Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Asn  
85 90 95  
Glu Gln Lys Val Ser Glu Ala Trp Leu Ala Ser Met Gln Asp Val Leu  
100 105 110  
Gly Val Gln Asp Gln Ala Ser Ile Pro Glu Leu Asn Ile Tyr Gln Cys  
115 120 125  
Gly Ser Tyr Thr Glu His Ser Leu Glu Asp Ala His Glu Ile Ala Lys  
130 135 140  
Asn Val Ile Ala Arg Gly Ile Gly Val Asn Lys Asn Glu Asp Leu Ser  
145 150 155 160  
Leu Asp Asn Ser Leu Leu Lys  
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<210> 14  
<211> 155  
<212> PRT  
<213> Helicobacter pylori

<400> 14  
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20 25 30  
Asn Gly Asp Leu Ile Val Lys Tyr Asp Val Arg Phe Lys Gln Pro Asn  
35 40 45  
Gln Asp His Met Asp Met Pro Ser Leu His Ser Leu Glu His Leu Val  
50 55 60  
Ala Glu Ile Ile Arg Asn His Ala Ser Tyr Val Val Asp Trp Ser Pro  
65 70 75 80  
Met Gly Cys Gln Thr Gly Phe Tyr Leu Thr Val Leu Asn His Asp Asn  
85 90 95  
Tyr Thr Glu Ile Leu Glu Val Leu Glu Lys Thr Met Gln Asp Val Leu  
100 105 110  
Lys Ala Thr Glu Val Pro Ala Ser Asn Glu Lys Gln Cys Gly Trp Ala  
115 120 125  
Ala Asn His Thr Leu Glu Gly Ala Lys Asp Leu Ala Arg Ala Phe Leu  
130 135 140  
Asp Lys Arg Ala Glu Trp Ser Glu Val Gly Val  
145 150 155

<210> 15  
<211> 157  
<212> PRT

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<213> *Bacillus subtilis*

<400> 15  
Met Pro Ser Val Glu Ser Phe Glu Leu Asp His Asn Ala Val Val Ala  
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20 25 30  
Val Asn Lys Phe Asp Ile Arg Phe Cys Gln Pro Asn Lys Gln Ala Met  
35 40 45  
Lys Pro Asp Thr Ile His Thr Leu Glu His Leu Leu Ala Phe Thr Ile  
50 55 60  
Arg Ser His Ala Glu Lys Tyr Asp His Phe Asp Ile Ile Asp Ile Ser  
65 70 75 80  
Pro Met Gly Cys Gln Thr Gly Tyr Tyr Leu Val Val Ser Gly Glu Pro  
85 90 95  
Thr Ser Ala Glu Ile Val Asp Leu Leu Glu Asp Thr Met Lys Glu Ala  
100 105 110  
Val Glu Ile Thr Glu Ile Pro Ala Ala Asn Glu Lys Gln Cys Gly Gln  
115 120 125  
Ala Lys Leu His Asp Leu Glu Gly Ala Lys Arg Leu Met Arg Phe Trp  
130 135 140  
Leu Ser Gln Asp Lys Glu Glu Leu Leu Lys Val Phe Gly  
145 150 155

<210> 16

<211> 173

<212> PRT

<213> *Borrelia burgdorferi*

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20 25 30  
Gly Ile Tyr Val Ser Arg Lys Asp Thr Phe Glu Asn Val Ile Phe Thr  
35 40 45  
Thr Ile Asp Ile Arg Ile Lys Ala Pro Asn Ile Glu Pro Ile Ile Glu  
50 55 60  
Asn Ala Ala Ile His Thr Ile Glu His Ile Gly Ala Thr Leu Leu Arg  
65 70 75 80  
Asn Asn Glu Val Trp Thr Glu Lys Ile Val Tyr Phe Gly Pro Met Gly  
85 90 95  
Cys Arg Thr Gly Phe Tyr Leu Ile Ile Phe Gly Asp Tyr Glu Ser Lys  
100 105 110  
Asp Leu Val Asp Leu Val Ser Trp Leu Phe Ser Glu Ile Val Asn Phe  
115 120 125

45551281

Ser Glu Pro Ile Pro Gly Ala Ser Asp Lys Glu Cys Gly Asn Tyr Lys  
130 135 140  
Glu His Asn Leu Asp Met Ala Lys Tyr Glu Ser Ser Lys Tyr Leu Gln  
145 150 155 160  
Ile Leu Asn Asn Ile Lys Glu Glu Asn Leu Lys Tyr Pro  
165 170

<210> 17  
<211> 172  
<212> PRT  
<213> Vibrio cholerae

<400> 17  
Met Pro Leu Leu Asp Ser Phe Thr Val Asp His Thr Arg Met Asn Ala  
1 5 10 15

Pro Ala Val Arg Val Ala Lys Thr Met Gln Thr Pro Lys Gly Asp Thr  
20 25 30

Ile Thr Val Phe Asp Leu Arg Phe Thr Met Pro Asn Lys Asp Ile Leu  
35 40 45

Ser Glu Arg Gly Ile His Thr Leu Glu His Leu Tyr Ala Gly Phe Met  
50 55 60

Arg Asn His Leu Asn Gly Ser Gln Val Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80

Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Ala Pro Thr  
85 90 95

Glu Gln Gln Val Ala Gln Ala Trp Leu Ala Ala Met Gln Asp Val Leu  
100 105 110

Lys Val Glu Ser Gln Glu Gln Ile Pro Glu Leu Asn Glu Tyr Gln Cys  
115 120 125

Gly Thr Ala Ala Met His Ser Leu Glu Glu Ala Lys Ala Ile Ala Lys  
130 135 140

Asn Val Ile Ala Ala Gly Ile Ser Val Asn Arg Asn Asp Glu Leu Ala  
145 150 155 160

Leu Pro Glu Ser Met Leu Asn Glu Leu Lys Val His  
165 170

<210> 18  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

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cgagatctg cgtttcaat ggataaacta cg

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<210> 19  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic primer

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<223> a, c, g, t, unknown or other

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ggccacgcgt cgactagtagac nnnnnnnnnn acgccc 36

<210> 21  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic primer

<400> 21  
gcactacagg cttgcaagcc c 21

<210> 22  
<211> 20  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Synthetic primer

<400> 22  
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<210> 23  
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<212> DNA  
<213> Artificial Sequence

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<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 23  
tctaatccca tcagatcccc 20

<210> 24  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 24  
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<210> 25  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

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<210> 26  
<211> 171  
<212> PRT  
<213> Escherichia coli

<400> 26  
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Pro Ala Val Arg Val Ala Lys Thr Met Asn Thr Pro His Gly Asp Ala  
20 25 30

Ile Thr Val Phe Asp Leu Arg Phe Cys Val Pro Asn Lys Glu Val Met  
35 40 45

Pro Glu Arg Gly Ile His Thr Leu Glu His Leu Phe Ala Gly Phe Met  
50 55 60

Arg Asn His Leu Asn Gly Asn Gly Val Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80

Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Ile Gly Thr Pro Asp  
85 90 95

Glu Gln Arg Val Ala Asp Ala Trp Lys Ala Ala Met Glu Asp Val Leu  
100 105 110

Lys Val Gln Asp Gln Asn Gln Ile Pro Glu Leu Asn Val Tyr Gln Cys  
115 120 125

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Gly Thr Tyr Gln Met His Ser Leu Gln Glu Ala Gln Asp Ile Ala Arg  
130 135 140  
Ser Ile Leu Glu Arg Asp Val Arg Ile Asn Ser Asn Glu Glu Leu Ala  
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<210> 27  
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<213> Escherichia coli

<400> 27  
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Pro Ala Val Arg Val Ala Lys Thr Met Asn Thr Pro His Gly Asp Ala  
20 25 30  
Ile Thr Val Phe Asp Leu Arg Phe Cys Val Pro Asn Lys Glu Val Met  
35 40 45  
Pro Glu Arg Gly Ile His Thr Leu Glu His Leu Phe Ala Gly Phe Met  
50 55 60  
Arg Asn His Leu Asn Gly Asn Gly Val Glu Ile Ile Asp Ile Ser Pro  
65 70 75 80  
Met Gly Cys Arg Thr Gly Phe Tyr Met Ser Leu Leu Val Arg Gln Met  
85 90 95  
Ser Ser Val Leu Leu Met Pro Gly Lys Arg Gln Trp Lys Thr Cys  
100 105 110

<210> 28  
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<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

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<210> 29  
<211> 7  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<220>

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<221> MOD\_RES  
<222> (3)  
<223> Val(DAPA)

<400> 29  
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<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 30  
Tyr Ser Thr Cys Asp Phe Ile Met  
1 5

<210> 31  
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<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 31  
Gly Val Asn Ala Cys Ser Ser Leu Phe  
1 5

<210> 32  
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<220>  
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<400> 32  
Gly Val Asn Ala Ser Ser Ser Leu Phe  
1 5

<210> 33  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<220>  
<221> MOD\_RES  
<222> (4)

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<223> Ala(DAPA)

<400> 33  
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1 5

<210> 34  
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<220>  
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<220>  
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<220>  
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Thr Met Gln Thr Pro Met Gly Asp Ala Ile Thr Val Phe Asp Leu Arg  
20 25 30

Phe Cys Ile Pro Asn Lys Glu Val Met Pro Glu Lys Gly Ile His Thr  
35 40 45

Leu Glu His Leu Phe Ala Gly Phe Met Arg Asp His Leu Asn Gly Asn  
50 55 60

Gly Val Glu Ile Ile Asp Ile Ser Pro Met Gly Cys Arg Thr Gly Phe  
65 70 75 80

Tyr Met Ser Leu Ile Gly Thr Pro Asp Lys Gln Arg Val Ala Asp Ala  
85 90 95

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Trp Lys Ala Ala Met Ala Asp Val Leu Lys Val Gln Asp Gln Asn Gln  
100 105 110

Ile Pro Glu Leu Asn Val Tyr Gln Cys Gly Thr Tyr Gln Met His Ser  
115 120 125

Leu Ser Glu Ala Gln Asp Ile Ala Arg His Ile Leu Glu Arg Asp Val  
130 135 140

Arg Val Asn Ser Asn Lys Glu Leu Ala Leu Pro Lys Glu Lys Leu Gln  
145 150 155 160

Glu Leu His Ile